

# Accelerated Site Technology Deployment

## Subject: Technology Fact Sheet Decontamination and Volume Reduction System

Los Alamos National Laboratory  
In Partnership with the Office of Science & Technology

### Introduction

Los Alamos National Laboratory currently has more than 2,400 cubic meters of oversized metallic transuranic (TRU) waste in storage. This waste is non-certifiable for shipment to the Waste Isolation Pilot Plant (WIPP) in its present packaging configuration. In addition, another 3000 cubic meters of similar waste from on-site decontamination and decommissioning activities and site upgrades are at various locations at Los Alamos. To meet the clean up commitments there is a need to deploy a system for decontaminating and volume reducing this waste that is less costly, less labor intensive, and quicker than the baseline method of processing the waste entirely by hand. The disposal of oversized, metallic TRU waste is a problem at many DOE sites.

To address the Laboratories needs, the DOE Office of Science and Technology (EM-50) has partnered with the DOE-Albuquerque Operations Office in an Accelerated Site Technology Deployment (ASTD) project. EM-50 is providing \$5M of funding for deployment of a Decontamination and Volume Reduction System (DVRS). Through this project, Los Alamos will procure and deploy an integrated system for decontaminating TRU metallic waste to low level waste, and significantly reducing the total volume of waste for disposal. The DVRS team consists of representatives from the DOE Los Alamos Area Office, Los Alamos National Laboratory with contractor support from Nuclear Fuel Services, Inc., BNFL Instruments, Inc., MAC Corporation, Merrick and Co., and NFS-Radiation Protection Services, Inc.

### Technical Need

The TRU oversized metallic waste in storage at Los Alamos is contained in fiberglass reinforced plywood boxes that will need to be characterized and opened. The metallic waste inside will then be decontaminated to low level

waste, if possible, and size reduced. The resulting low level waste will be disposed of on site, and the TRU portions will be packaged and certified for shipment to WIPP.

Existing baseline technologies are manual operations for decontamination and size reduction. The characterization tools are hand-held counters. An advanced system is needed that will reduce worker exposure and programmatic risk, as well as provide for cost savings and reduce the time for processing this waste.



**DVRS Characterization Station 1 "Slab Detector"**

### System Description

The DVRS process will reduce the volume of oversized metallic TRU waste using an integrated system of technology and equipment for assaying, confinement, decontamination, and volume reduction. The project includes a 13,200 square foot confinement area with active ventilation and contamination control, a multi-station passive-active, neutron non-destructive analysis system, a range of fixed and portable processes for decontamination of metal objects, and a large dedicated system to shear and deform large metallic objects into drum sized items.



### Benefits

The DVRS can process from 4 to 6 cubic meters per day, giving LANL the capability to process the entire volume of oversized metallic TRU waste (including the 3000 cubic meters of D&D waste) within 6 years.

Benefits to LANL waste management operations over the baseline methods include:

- Reduced radiological doses to workers,
- Reduction of the large metallic TRU waste work-off schedule significantly,
- Cost savings of approximately \$168 million by reducing the time needed to process the waste, volume reduction of waste, and by decontaminating most of the TRU waste volume to low level waste.



Fiberglass re-enforced plywood boxes

### Status

The DVRS will begin Phase I of operations in the May-June time frame of FY99. This initial stage involves non-destructive assay of the fiberglass re-enforced plywood boxes to determine the radiological characteristics within the boxes using "Slab Detectors". In FY99, the following components will be complete:

- Project enclosure design
- Project electrical upgrades
- Secondary confinement system installed
- Shear/Bailer installed
- Primary confinement system onsite
- Ventilation system onsite
- Operational documentation drafted
- Operational training materials drafted
- Authorization basis documents drafted

In FY 00 the primary confinement, ventilation system and fire suppression systems will be completed. The entire system will be operational in July 2000.

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**For more information about deployment of the Decontamination and Volume Reduction System at Los Alamos National Laboratory,**

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